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Experts' perspective on a definition for delayed return-to-work after surgery for nontraumatic upper extremity disorders: Recommendations and implications

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ABSTRACT

Study Design: Descriptive study.
Introduction: A delayed return to work (RTW) is often associated with poorer outcomes after a workplace injury but is ill defined.
Purpose of the Study: To define delayed RTW after surgery for nontraumatic upper extremity conditions.
Methods: Experts were consulted to define delayed RTW and whether a universal time point can determine the transition from early to delayed RTW.
Results: Forty-two experts defined a delayed RTW as either a worker not returning to preinjury (or similar) work within the expected time frame (45%); not returning to any type of work (36%); or recovering slower than expected (12%). Two-thirds of experts believed that universal time points to delineate delayed RTW should be avoided.
Discussion: Multiple factors complicate a uniform definition of delayed RTW.
Conclusion: Defining delayed RTW should be individualized with due consideration to the type of work. Time-based cutoffs for outcome measurement may not be appropriate with continuous measures more appropriate in research.
Level of Evidence: Decision analysis V.

Introduction

Epidemiologic studies suggest that approximately 70% of the general population in Western countries will experience upper extremity (UE) pain over their lifetime.[1,2] Nontraumatic UE disorders cause significant sickness absence, disability, and high economic and health care burden.[2,3] Up to 30% of workers' compensation injuries that develop into claims requiring more than 1 week off work are related to UE,[4] with costs ranging on average between US$5000 and $11,000.[5] Furthermore, nontraumatic UE conditions such as carpal tunnel syndrome have among the highest reported days off work of any condition; with some studies reporting the median duration of sickness absence from work after surgery to be as high as 60 days.[6] After surgery, return to work (RTW) is often used as an outcome to measure progress or as an indicator of functional ability.[7] It is also a common metric used by third party or workers' compensation insurers to monitor the effectiveness of insurance schemes, clinical management, and RTW interventions.[8,9]

Promoting early RTW and consequently avoiding (unnecessary) delayed RTW are phrases commonly used by clinicians, researchers,

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insurers, and policymakers when dealing with workers with nontraumatic UE conditions, especially after treatments to remediate the symptoms, such as surgery, have been provided.[3] These phrases originate from both experience and evidence that the longer an injured worker remains off work, the more unlikely it is that the worker will return to work.[5] Treatments by an occupational therapist or physiotherapist have a clear goal to motivate and promote worker's physical functioning (including work).[10] Thus, early RTW plausibly suggests treatment success and is purported to have benefits to all stakeholders involved: the worker returns to work, which has health, quality of life, and financial benefits; the employer maintains productivity; and the insurer has lower wage replacement and often lower treatment costs.[11-14] Conversely, a delayed RTW denotes a poor outcome with adverse health, well-being, and financial consequences.[12,15] The evidence espouses that unnecessary delays in returning to work should be avoided, and promoting early RTW should be the focus for recovery from injury.[3,7,10,11] Similarly, studies of RTW prognosis after surgery for nontraumatic UE conditions often examine variables associated with delayed RTW in an attempt to understand this complex phenomena.[16-20]

Time-based cutoffs are typically used to demarcate a transition from an acute to a chronic (work) disability state for nontraumatic musculoskeletal disorders,[21] including those of the UE.[3,5] The premise being that interventions are designed to prevent acute conditions becoming chronic or persistent, and hence causing a chronic disability state.[3,13] Similarly, the developers of certain screening tools for determining risk factors for work disability for UE and other musculoskeletal disorders advocate for the tools to be administered at specific time frames, usually in the subacute phase before a delayed RTW occurs.[22-24] A recent systematic review of workplace interventions operationalized the definition for a timely (or nondelayed) RTW as less than 4 weeks.[25] This suggests that RTW is delayed if a worker has not returned to work within a month for a musculoskeletal condition including those affecting the UE. These time points are found on evidence that up to 70% of workers return to work within 1 month and approximately 90% return within 3 months.[26] Researchers have previously advocated that a differentiation between early and delayed RTW is needed,[25] yet there is still a paucity of research exploring this topic, especially in relation to nontraumatic UE conditions, such as carpal tunnel syndrome, lateral epicondylalgia, and rotator cuff tendinopathy.[19]

Purpose of the study

The purpose of this study was to define delayed RTW, specifically for workers who have had surgery for nontraumatic disorders of the UE, using a panel of experts. This definition could be used in future research to determine time points for outcome measurement in studies of prognosis and treatment effectiveness for nontraumatic UE disorders. The study was also designed to explore how experts perceived the use of particular definitions for delayed RTW and time points to delineate transition to a poorer RTW outcome (ie, longer work absences). This is of importance as much of the research in this field has been conducted in workers with low back pain. However, the research on back pain or other musculoskeletal conditions but may not directly apply to the UE. Thus, a study exploring definitions and time points for poorer work outcomes (such as a delayed RTW) specifically for workers with nontraumatic UE conditions is needed.

Materials and methods

Experts were surveyed on their views regarding delayed RTW via an electronic questionnaire that was part of a Delphi study. The methods and results of which are reported elsewhere.[27] The experts consented to participate, and ethical approval was obtained from the Ethics Committee of The University of Queensland before commencement of the study (#2011SHRS-OT008). Data were collected between May and August 2014.

Selection of experts

International experts ($n = 102$) with a track record of at least 1 publication on work disability for workers with UE disorders or 3 or more publications on prognosis for delayed RTW or defining RTW were invited to participate. With regard to the selection of experts, at first, we restricted the selection of experts to those who had published solely on workers with UE conditions. However, this yielded to few experts. Thus, the definition for an expert for the purpose of this study was broadened to include those who had published 3 or more articles on musculoskeletal diagnoses and RTW. Experts were also able to exclude themselves from the study if they did not consider themselves to qualify as an expert on this topic.

Experts were identified through a literature search of peer-reviewed articles or doctoral theses published in the last 20 years in databases, including Google Scholar, PubMed, MEDLINE, ScienceDirect, and ProQuest Dissertations. The search terms used included prognos*, predict*, determinant*, work, employment, return-to-work, work disability, sickness absence, sick leave, work loss, upper limb, UE, hand, wrist, elbow, shoulder, musculoskeletal, and back pain. Retrieved searches were scanned by 1 member of the research team (SEP) to determine author's eligibility. There was no restriction on language. Searches were also conducted in parallel with a scoping review, and a systematic review was conducted by the authors in which the findings are reported elsewhere.[16,19] Both first and senior/corresponding authors of these publications were contacted. Six additional experts who met these criteria were not selected as they were known to have retired or were deceased. The compiled list provided a global representation of experts including both researchers and clinicians from various disciplines (occupational health, epidemiology, hand surgery, occupational therapy, and physical therapy).

Questionnaire development

A questionnaire was developed for this study (Appendix A). Questions were agreed on by all members of the research team. The research team consisted of an occupational therapist experience in hand therapy and occupational rehabilitation, 2 physiotherapists (1 with an experience in occupational health), and an orthopedic UE surgeon. The questionnaire was pilot-tested using 3 health care professionals who had more than 10 years of experience in managing injured workers (hand surgeon, occupational and/or hand therapist, and occupational physician). They provided feedback on the content of the questionnaire, and modifications were then made and reviewed again.

The first question investigated how the experts believed delayed RTW should be defined with respect to workers who have had surgery for nontraumatic UE conditions. Three definitions based on the literature were provided as potential answers[28-31]: (1) a worker does not return to his and/or her preinjury work within the expected time frame; (2) a worker does not return to any type of work within the expected time frame; and (3) a worker recovers slower from his and/or her injury than expected. Experts could also formulate their own definition for delayed RTW, for workers who have had surgery for nontraumatic UE conditions, if their view was not reflected in the provided definitions. The aim of this question was to establish whether there is agreement on a definition based

on those used previously in the literature to be used in future research studies.

The second question inquired whether experts believed a universal period could be defined to determine the transition to a delayed RTW for workers after surgery for a nontraumatic UE disorder, irrespective of the diagnosis (binary response: yes/no). If the experts responded affirmatively, they were asked to indicate at what period they would consider RTW to be delayed. Response options were after 2 weeks or more, after 4 weeks or more, after 6 weeks or more, after 8 weeks or more, after 10 weeks or more, after 12 weeks or more, after 16 weeks or more, after 6 months or more, after 12 months or more, and after 24 months or more. The periods were based on the literature.[31-33] The responses to this question were later collapsed into wider time intervals due to the heterogeneity in responses (Table 1). Experts were encouraged to explain their answers qualitatively for both questions.

Data collection and analysis

Questionnaires were sent electronically to the experts (SurveyMonkey; www.surveymonkey.com). Three reminders were sent to potential experts over a period of 6 weeks. Experts also had the option to opt out of participating in the study and could voluntarily provide reasons for their nonparticipation. The data were analyzed using frequencies, and the demographic information was analyzed using frequencies, means, and standard deviations (SDs). Open-ended comments were summarized thematically in an iterative process between the authors (SEP, VJ, and MWC) to determine how the comments would be interpreted and thematically categorized. All authors agreed on the meaning of the coded responses. Categorization of the coded responses into themes was determined by 2 authors (SEP and VJ), and disagreements were resolved by a third author (MWC). Chi-square and Fisher exact tests were conducted to establish whether there were any differences between responses of the participants with respect to the geographic location (ie, North America, Europe, Australasia), field of practice (ie, UE vs other), and nature of their experience (ie, clinical, research, academic vocations).

Results

Participants

Of the 102 experts invited to participate, 22 declined to participate and 38 did not respond despite reminders being sent at 2, 4, and 6 weeks after the initial invitation. Forty-two experts completed the questionnaire. Demographic information of the experts is detailed in Table 2. The largest group of experts (33.3%) worked in academia, research, and clinical practice. The experts who worked clinically had on average mean (SD) of 17.2 (10.5) years of clinical experience. The mean (SD) research experience was 15.9 (7.5) years. Most experts were males (59.5%). Geographic representations were as follows: North America: 19; Europe: 18; Australia: 3; Africa: 1; and Asia: 1.

Table 1
Views regarding periods to define delayed RTW

Time period to define delayed RTW	*N*	%
No universal period to define delayed RTW	28	67.0
Universal period to define delayed RTW	14	33.0
2-4 wk	2	4.8
6-10 wk	3	7.0
After 12 wk	5	11.9
After 16 wk	3	7.1
After 6 mo	1	2.4
After 12 mo	0	0

RTW = return to work.
Number (*n*) or percentage (%) of experts.

Table 2
Demographic information of the experts

	N (%)
Sex	
Male	25 (59.5)
Female	17 (40.5)
Age (y)	
20-29	1 (2.4)
30-39	5 (11.9)
40-49	11 (26.2)
50-59	19 (45)
60 or older	6 (14.3)
Country	
Canada	11 (26.2)
The Netherlands	8 (19)
USA	8 (19)
Australia	3 (7.1)
United Kingdom	3 (7.1)
France	3 (7.1)
Denmark	1 (2.4)
Finland	1 (2.4)
Slovenia	1 (2.4)
Sweden	1 (2.4)
South Africa	1 (2.4)
Israel	1 (2.4)
China	1 (2.4)
Primary profession	
Physical therapist	10 (23.8)
Orthopedic surgeon	7 (16.7)
Academic or professor in occupational health	5 (11.9)
Occupational physician	5 (11.9)
Occupational therapist	4 (9.5)
Research scientist	4 (9.5)
Biostatistician	2 (4.8)
Human movement scientist	2 (4.8)
Plastic surgeon	2 (4.8)
Neurologist	1 (2.4)
Primary occupational roles	
Research/academia/clinical	14 (33.3)
Academia and research	11 (26.2)
Research	10 (23.8)
Clinical	2 (4.8)
Academia (teaching)	2 (4.8)
Clinical/research	2 (4.8)

Number (*n*) or percentage (%) of experts.

Definition for delayed RTW

With respect to the listed definitions, 19 experts (45.2%) defined delayed RTW as not returning to preinjury work within the expected time frame; 15 experts (35.7%) defined it as not returning to *any* type of work within the expected time frame; and 5 experts (11.9%) defined it as a worker recovering slower than expected. The remaining 3 experts (7.1%) suggested additions or modifications to the provided definitions. One expert emphasized return to original or *similar* work. Another expert emphasized that the time frame to *sustainable* work should be considered. Another expert emphasized that resumption of part-time or full-time work should be considered in the definition (taking into account preinjury work hours).

There were no significant differences between participant responses with respect to their geographic location, field of practice, or nature of their experience ($P > .05$).

Timeline to define delayed RTW

Two-thirds of experts (66.7%) stated that they did not believe that a specific period to define delayed RTW for workers who have had surgery for nontraumatic UE conditions should be used. There were no significant differences between participant responses with

respect to their geographic location, field of practice, or nature of their experience. For the remaining one third who did believe a set duration could be used, there was no consensus, and the period before RTW could be considered delayed varied from 2 to 4 weeks to 6 months (Table 1). Twenty-four experts provided further explanatory comments. Three themes emerged from the data.

RTW and delayed RTW are multifactorial

Experts commented that RTW is multifactorial.

> There are many factors that influence the timing of return to work ranging from the intrinsic factors expressed by the patient who had the surgery and his/her trajectory of recovery, consideration for complications from surgical event, influence of comorbidities such as diabetes that delay healing; extrinsic factors such as work context and requirements.

Experts also stressed that these factors might influence RTW and need to be remediated before a delayed RTW label is assigned. If these factors have not been remediated appropriately, it is difficult to establish a clear time point after which RTW can be considered delayed, and thus needs an individualized approach.

> I believe an individual approach is required to define a delayed RTW. It is dependent on the nature of the condition and surgery. For example, surgery on the nondominant hand is likely to see a worker return to work in some capacity sooner than surgery on the dominant shoulder.

Experts detailed various factors related to the following domains:

1. *Biological, psychological, and social factors related to the worker* (including his and/or her injury), such as the worker's post-surgical strength, psychological state, and support on RTW;
2. *Biological, psychological, and social factors related to management of the injury*, such as surgery, rehabilitation, and involvement of health care providers. One expert also stated that surgery for nontraumatic conditions shifts RTW timelines due to iatrogenic effects of the surgery itself.

> I think we can apply [time-based cutoffs] for nonsurgical cases, but once surgery has been conducted, all the timelines dramatically shift. This is partially due to physiological aspects of healing postsurgery and the associated complications, but also the changes in the insurance and compensation policies associated with surgery (ie, workers who have had surgery are often eligible for many more services and benefits).

3. *Physical demands, psychological factors, and social factors related to the workplace*.

Experts also commented that the following contextual elements may have an impact on time to RTW: type of work, availability of job modification and suitable duties, employer's decision regarding availability of duties and fear of reinjury while recovering at work, supervisor and coworker support, and being able to fit in rehabilitation after returning to work.

> Many factors can influence recovery and rehabilitation after a surgery for a UE nontraumatic MSD but mainly work demands (psychosocial and physical) could delay the RTW for certain job categories and not for others, thus one general cut-off point should not be used.

4. Factors *related to the insurance setting*. Different countries may have different insurance frameworks. The fact that injured workers have access to compensation, income replacement, and rehabilitation may play an important role in how RTW could be defined.

A definition of delayed RTW should be worker centric

Experts stated that a definition for delayed RTW needs to be worker centric and consider the individuality of each worker's situation. Experts indicated that a one-size-fits-all approach should be avoided and that RTW should be focused on the individual characteristics of the worker, injury, and recovery.

Misuse of time-based thresholds for defining delayed RTW

Experts stated that there is a risk of using time-based cutoffs when a worker transitions from an acceptable RTW time frame to a delayed RTW. The implementation of time-based cutoffs pragmatically may not take into consideration the myriad of factors mentioned previously. Experts cautioned against the use of time-based cutoffs and warned against their potential misuse for purposes that they were not intended for. For example, 1 expert warned that cutoffs used for research could be applied to classify malingerers in a compensation setting.

Discussion

This study aimed to establish a definition for delayed RTW and explore whether a time-based cutoff to differentiate transition to a delayed RTW state after surgery for a nontraumatic UE condition could be determined using an expert panel. The experts' responses revealed differing views regarding what constitutes a delayed RTW outcome and did not agree on the use of a specific time-based cutoff. These findings constitute an important starting point in opening a dialog regarding definitions for RTW outcomes and their measurement in future research studies.

Difficulty in defining work in delayed RTW after surgery for nontraumatic UE conditions

Experts were relatively divided between delayed RTW being defined as a worker not returning to preinjury (or similar) work within the expected time frame and as not returning to any type of work. Interestingly, few experts preferred delayed RTW being defined as a worker recovering slower than expected, that is, a definition without the type of work being specified. Difficulty in defining RTW is not a new dilemma.[9,28,29,34] A systematic review on RTW after carpal tunnel surgery revealed not only a wide variety of RTW outcomes (eg, time from injury to RTW [continuous variable], whether the worker had returned at a specific time point [dichotomous], number of sickness absences after the injury, and consideration of type of work on return) but also little explanation of what constituted RTW.[31]

Our survey highlights that more efforts are needed to further refine the type of work a worker returns to in defining delayed RTW. Our findings indicate that type of work (any or preinjury [or similar] work), part-time or full-time capacity, and sustainability of work need to be considered; as well as how instances of voluntary exit from the workforce are reported. Previous research supports this recommendation.[28,29,34]

Difficulty in defining delayed in delayed RTW after surgery for nontraumatic UE conditions

According to most experts, specific time-based cutoffs to delineate transition to a delayed RTW should not be used. This is an important and potentially problematic finding, as early and delayed

RTW both intuitively imply a time line. However, even among experts who believe a universal period can be defined, the duration of this period varied largely. The median duration for RTW to be considered delayed was 3 months, but similar number of experts suggested substantially shorter or longer periods. The experts, supported by the existing literature, highlighted the difficulties of using time-based cutoffs to define delayed RTW.[25,28]

Many factors influence RTW. The literature indicates that factors influencing RTW are not only related to the worker or his and/or her condition and circumstances but also under control of other stakeholders, such as health care providers, employers, and insurers.[35,36] For example, surgeons are more likely to certify a worker off work for longer if a worker appears anxious or experiences pain at the 6-week review, whereas workers with fewer psychosocial problems were likely to be certified fit for work.[33] Moreover, fear-avoidance beliefs of clinicians also directly influence RTW.[37,38]

Potential negative consequences of defining delayed in delayed RTW

Several experts expressed concerns regarding using time-based cutoffs to define delayed RTW. First, they could be used for unintended purpose by other stakeholders not understanding the specifics of the worker's condition and RTW. Therefore, application of strict time-based criteria may lead to workers being unfairly classified as having delayed RTW. Second, time-based criteria may also act as self-fulfilling prophecies. If workers are advised that RTW is expected at, for example, 4 weeks, workers may be prompted to remain off work until this time. There may also be added stress for the worker returning to work using a predetermined time line when recovery may be slower than expected, or psychological or workplace issues have not been remediated before the worker's return. This is supported by previous studies and guidelines for workers who have ongoing pain, physical dysfunction, and/or psychosocial (including workplace) issues that limit their return to some type of work.[39]

Recommendations for future research and clinical practice

In prognostic studies, the time points used for data collection are an important consideration. However, our findings indicate that it is difficult to determine whether RTW at a certain cutoff would be considered a delayed RTW outcome. This raises the question about what a non-RTW at a certain time point actually means, especially if the type of work has not been accounted for. Using dichotomous RTW outcomes is common in the literature, likely due to the straightforward data analysis it affords.[25] However, this requires the researcher to assign a time point for data collection; thereby, implying that a person who has not returned by a specific time point has had a delayed (or less favorable) RTW outcome. Based on our findings and supported by the literature,[25] we recommend using continuous RTW outcomes for UE conditions. These include cumulative time off work from injury and/or surgery and time until first RTW and time to a lasting RTW (a period of absence until previous or equal work has been resumed and maintained for a period established by the researchers). The outcome should also account for the type of work returned to as detailed previously, whether it be return to existing or similar work duties in the same capacity, modified work duties (eg, lighter work or reduced hours [eg, full time to part time]), return to an alternate occupation, or voluntary exit form the workforce (eg, maternity leave or retirement by choice). If these recommendations are adhered to, it would also allow for comparison of similar outcomes across studies and meta-analysis of homogeneous studies of workers with UE conditions.

The findings also suggest that clinicians provide increased clarity before suggesting a worker has had a delay in their RTW after UE surgery, in their reporting to stakeholders, especially in a workers' compensation context. Instead, focus should be on the work context, setting, job situation, roles, hours, and decisions behind any job or role change. Dialog between stakeholders needs to address whether various risk factors have first been remediated. This avoids the negative consequences of using the term delayed RTW without further explanation of the multitude of factors that may be influencing RTW.

This study provides important findings and recommendations for future research and clinical practice for workers who have nontraumatic UE conditions. Further exploration using other methods, such as a working group, may be an important next step forward to establish guidelines for consistent definitions that can be used in research and also applied pragmatically. A limitation of this study is that only 40% of potential experts completed the questionnaire. However, this is common in electronic survey research and is considered acceptable.[40] A systematic review reported that electronic surveys have a high percentage of nonresponses due to distribution errors (eg, respondent no longer uses the e-mail address), as well as respondent-specific issues (eg, time constraints) or lack of incentives.[41] Most respondents were from claim-based insurance systems (ie, North America, Australia). It is important to note that these countries have different compensation schemes for injured workers. It is unknown whether differences between compensation systems may have influenced the expert's responses. Summarizing the differences of the compensation schemes is outside the scope of this article, but a detailed description of some of the key differences has been outlined by Lippel and Lotters.[42] Therefore, there may be response biased regarding the experiences of the experts having conducted research or working in jurisdictions with workers' compensation insurance. However, the study did yield a wide representation of experts across settings and from both clinical and academic fields.

Conclusion

Our study revealed that experts have rather different perspectives on what constitutes delayed RTW and on a specific time point to determine transition for a delayed RTW. Multiple intrinsic and extrinsic factors complicate a uniform definition of delayed RTW. Defining delayed RTW should be individualized and worker centric. In the absence of a standard approach to defining delayed RTW outcomes, researchers need to provide adequate detail in their description of work-related outcomes to allow for both research and clinical utility.

Supplementary data

Supplementary data related to this article can be found at http://dx.doi.org/10.1016/j.jht.2017.02.009.

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Quiz: #552

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#1. A primary objective of the paper is to
   a. define a series of non-traumatic pathologies of the upper extremity
   b. delineate between "itis" and "osis" when assessing upper extremity tendonopathies
   c. define the heretofore ill-defined term delayed return to work
   d. describe best practices for treating post op upper extremity tendonopathies

#2. Experts' opinions were collected through
   a. electronic questionnaires
   b. live serial interviews
   c. telephone interviews
   d. internet chat rooms

#3. The definition of delayed RTW most commonly selected was not returning to work
   a. by 6 weeks post op
   b. by 12 weeks post op
   c. until their insurance coverage was exhausted
   d. within the expected time frame

#4. Setting a time frame for RTC requires
   a. strict protocols which are diagnostically driven
   b. a team conference chaired by the surgeon
   c. an individualized approach
   d. approval of the chief of service

#5. The authors recommend not placing strict time parameters for delayed RTC
   a. false
   b. true

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